

MISSOURI ALIGNMENT FOR NIH SUPPLEMENT SLEEP, SLEEP DISORDERS, AND BIOLOGICAL RHYTHMS

| SLEEP, SLEEP DISORDERS, AND BIOLOGICAL RHYTHMS | | |
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| Missouri Grade Level Expectations: Science – Grades 9 – 11 | | |
| Lesson | Standard | GLE |
| 4 | 3.2.G | Life processes can be disrupted by disease (intrinsic failures of the organ systems or by infection due to other organisms). |
| 4 | 3.3.D.c | Recognize that new heritable characteristics can only result from new combinations of existing genes or from mutations of genes in an organism's sex cells. |
| 3 | 4.3.C.a | Describe how variation in characteristics provides populations an advantage for survival. |
| 3 | 4.3.C.b | Identify examples of adaptations that may have resulted from variations favored by natural selection. |
| 3 | 4.3.C.d | Explain how environmental factors (e.g., habitat loss, climate change, pollution, introduction of non-native species) can be agents of natural selection. |
| 1, 2, 3, 4 | 7.1.A.a | Formulate testable questions and hypotheses. |
| 1, 2, 3 | 7.1.A.b | Analyzing an experiment, identify the components (i.e., independent variable, dependent variables, control of constants, multiple trials) and explain their importance to the design of a valid experiment. |
| 1 | 7.1.A.c | Design and conduct a valid experiment. |
| 1, 3 | 7.1.A.d | Recognize it is not always possible, for practical or ethical reasons, to control some conditions (e.g., when sampling or testing humans, when observing animal behaviors in nature). |
| 3 | 7.1.A.e | Acknowledge some scientific explanations (e.g., explanations of astronomical or meteorological phenomena) cannot be tested using the standard experimental "scientific method" due to the limits of the laboratory environment, resources, and/or technologies. |
| 1, 2 | 7.1.A.f | Acknowledge there is no fixed procedure called "the scientific method", but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations. |
| 1, 3 | 7.1.A.g | Evaluate the design of an experiment and make suggestions for reasonable improvements. |
| 1, 2, 3 | 7.1.B.a | Make qualitative and quantitative observations using the appropriate senses, tools and equipment to gather data (e.g., microscopes, thermometers, analog and digital meters, computers, spring scales, balances, metric rulers, graduated cylinders). |
| Pre-lesson, 1, 2, 3 | 7.1.B.c | Determine the appropriate tools and techniques to collect, analyze, and interpret data. |
| 1, 2, 3 | 7.1.B.d | Judge whether measurements and computation of quantities are reasonable. |
| 1, 2, 3, 4 | 7.1.C.a | Use quantitative and qualitative data as support for reasonable explanations (conclusions). |
| 1, 2, 3, 4 | 7.1.C.b | Analyze experimental data to determine patterns, relationship, perspectives, and credibility of explanations (e.g., predict/extrapolate data, explain the relationship between the independent and dependent variable). |

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| Pre-lesson, 1, 2, 3 | 7.1.C.c | Identify the possible effects of errors in observations, measurements, and calculations, on the validity and reliability of data and resultant explanations (conclusions). |
| 1, 2, 3, 4 | 7.1.D.a | Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories). |
| 1, 2, 3, 4 | 7.1.D.b | Evaluate the reasonableness of an explanation (conclusion). |
| Pre-lesson, 1, 2, 3 | 7.1.E.a | Communicate the procedures and results of investigations and explanations through: oral presentations; drawings and maps; data tables (allowing for the recording and analysis of data relevant to the experiment such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities); graphs (bar, single, and multiple line); equations and writings. |
| 1, 2, 3, 4 | 7.1.E.b | Communicate and defend a scientific argument. |
| 1, 2 | 7.1.E.c | Explain the importance of the public presentation of scientific work and supporting evidence to the scientific community (e.g., work and evidence must be critiqued, reviewed, and validated by peers; needed for subsequent investigations by peers; results can influence the decisions regarding future scientific work). |
| 2 | 8.1.A | Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all. |
| 2, 3 | 8.1.B.a | Recognize the relationships linking technology and science (e.g., how technological problems may create a demand for new science knowledge, how new technologies make it possible for scientists to extend research and advance science). |
| 4, 5 | 8.2.B.a | Identify and describe how explanations (hypotheses, laws, theories) of scientific phenomena have changed over time as a result of new evidence (e.g., model of the solar system, basic structure of matter, structure of an atom, Theory of Plate Tectonics, Big Bang and nebular theory of the Universe, explanation of electric current). |
| 5 | 8.3.B.a | Analyze the roles of science and society as they interact to determine the direction of scientific and technological progress (e.g., prioritization of and funding for new scientific research and technological development is determined on the basis of individual, political and social values and needs; understanding basic concepts and principles of science and technology influences debate about the economics, policies, politics, and ethics of various scientific and technological challenges). |
| 5 | 8.3.B.b | Identify and describe major scientific and technological challenges to society and their ramifications for public policy (e.g., global warming, limitations to fossil fuels, genetic engineering of plants, space and/or medical research). |
| 3 | 8.3.C.b | Identify the ethical issues involved in experimentation (i.e., risks to organisms or environment). |
| 2 | 8.3.C.c | Identify and evaluate the role of models as an ethical alternative to direct experimentation (e.g., using a model for a stream rather than pouring oil in an existing stream when studying the effects of oil pollution). |
| Missouri Grade Level Expectations: Mathematics – Grades 9 & 10 | | |
| Lesson | Standard | GLE |
| Pre-lesson, 1, 3 | MA 1 3.4 | Use real numbers to solve problems. |
| Pre-lesson, 1, 3 | MA 1,4,5 1.4,3.4 | Apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases |

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| | | and technology for more complicated cases. |
| Pre-lesson, 1, 3 | MA 5 1.10,3.3 | Apply all operations on real numbers |
| Pre-lesson, 1, 3 | MA 1 3.8 | Judge the reasonableness of numerical computations and their results. |
| 1, 3 | MA 4 1.6 | Compare and contrast various forms of representations of patterns. |
| 1, 3 | MA 2 3.1 | Draw or use visual models to represent and solve problems. |
| Pre-lesson, 1, 3 | MA 3 1.2 | Formulate questions, design studies and collect data about a characteristic. |
| 1, 2, 3 | MA 6 1.8, 3.6 | Select, create and use appropriate graphical representation of data. |
| 1 | MA 3 1.6 | Display and analyze bivariate data where one variable is categorical and the other is numerical. (10) |
| Missouri Grade Level Expectations: Communication Arts – Grades 9 – 12 | | |
| Lesson | Standard | GLE |
| All lessons | CA 2, 3 1.6 | Apply decoding strategies to “problem-solve” unknown words when reading. |
| All lessons | CA 2, 3 1.5, 1.6 | Develop vocabulary through text, using roots and affixes, context clues, glossary, dictionary and thesaurus. |
| All lessons | CA 2, 3 1.5 & 1.6 | Apply pre-reading strategies to aid comprehension: access prior knowledge, preview, predict, set a purpose and rate for reading. |
| All lessons | CA 2,3 1.5 & 1.6 | During reading, utilize strategies to self-question and correct, infer, visualize, predict and check using cueing systems: meaning, structure, and visual. |
| All lessons | CA 2, 3 1.6 & 3.5 | Apply post-reading skills to comprehend and interpret text: question to clarify, reflect, analyze, draw conclusions, summarize, and paraphrase. |
| All lessons | CA 2, 3, 7 1.5, 1.6, 1.9 | Compare, contrast, analyze and evaluate connections between text ideas and own experiences. |
| All lessons | CA 3 1.6, 1.7, 2.4, 3.5, 3.6, 3.1, 3.4 | Use details from text to analyze and evaluate the logic, reasonableness, and audience appeal of arguments in texts, identify and analyze faulty reasoning and unfounded inferences, and evaluate for accuracy and adequacy of evidence. |
| All lessons | CA 3 1.5, 1.6 | Read and apply multi-step directions to perform complex procedures and/or tasks. |
| All lessons | CA 1, 4 1.8, 2.1, 2.2 | Follow a writing process to independently create appropriate graphic organizers as needed and apply writing process to write effectively in various forms and types of writing. |
| All lessons | CA 1 1.6, 2.2 | Use conventions of capitalization in written text. |
| All lessons | CA 1 1.6, 2.2 | Use parts of speech correctly in written text. |
| All lessons | CA 1 1.6, 2.1, 2.2 | In writing, use dictionary, spell-check and other resources to spell correctly. |
| All lessons | CA 1 1.6, 2.1, 2.2 | In composing text, use a variety of sentence structures, cohesive devices, and an active voice. |

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| All lessons | CA 2, 3, 4 1.6, 1.8, 4.8 | Routinely use an appropriate method for note-taking. |
| 4, 5 | CA 2, 3, 4 1.8, 2.1, 4.1 | Write multi-paragraph informative and persuasive essays, multi-paragraph texts that interpret, evaluate or persuade, use specific rhetorical devices, and use relevant evidence to defend a position. |
| 1, 2, 3 | CA 2, 3, 4 1.2, 2.1, 3.5, 4.1 | Write a multi-paragraph text that summarizes large amounts of information clearly and concisely. |
| All lessons | CA 5, 6 1.5, 1.6, 1.10 | Listen for enjoyment, for information, for directions, critically to summarize and evaluate communications that inform, persuade and entertain, to evaluate own and others' effectiveness in presentations and group discussions, using provided criteria, and to evaluate the validity and reliability of speaker's message. |
| All lessons | CA 5, 6 1.5 | Use active-listening behaviors (e.g., asks questions of speaker and uses body language and facial expressions to indicate agreement, disagreement or confusion). |
| All lessons | CA 1, 6 2.1, 2.3, 4.6 | In discussions and presentations, create concise presentations on a variety of topics, incorporate appropriate media or technology, respond to feedback, defend ideas, and demonstrate poise and self-control. |
| 1, 2, 3 | CA 1, 6 2.1, 2.3 | Give clear and concise multi-step oral directions to perform complex procedures and/or tasks. |
| 1, 2, 3 | CA 2, 3 1.1, 1.4, 4.5 | Develop an appropriate research plan to guide investigation and research of focus questions. |
| 2 | CA 5 1.5, 1.7, 2.7 | Analyze, describe and evaluate the elements of messages projected in various media (e.g., videos, pictures, web-sites, artwork, plays and/or news programs). |

Missouri Grade Level Expectations: Health Education – Grades 9 – 12 (2006 Draft Version)

| Lesson | Standard | GLE |
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| 3, 4 | I 1.K.b | Describe the impact heredity has on system functions and disease formation. |
| 5 | I 2.A.a | Cite evidence that supports the rights of both individuals and the communities when making societal health decisions. |
| 1, 2, 3, 4 | II 1.A.a | Demonstrate how short and long term behaviors affect the functioning of the human body systems. |
| 3, 4 | II 1.A.b | Investigate the impact history and current practices have on the development of a healthy body. |
| 3, 5 | II 1.B | Discuss the concept of preventive care and its importance in maintaining and improving health. |
| 3, 5 | II 3.A.b | Analyze the health claims that the media make and their impact on personal and emotional health. |
| 5 | II 3.C | Develop a list of individuals and/or governmental agencies that have a major responsibility for providing assistance to people for their health. |
| 4 | III 1.A.a | Describe the effects of positive lifestyle behaviors on the occurrence of disease. |

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| 4 | III 1.A.b | Conduct research to answer questions regarding epidemiological studies and cite evidence about the management and prevention of communicable and non-communicable diseases (e.g., local health department statistics, youth risk behavior survey [YRBS], Centers for Disease Control and Prevention [CDC], National Institutes of Health [NIH]). |
| 4 | III 1.J.a | Conduct research to answer questions regarding epidemiological studies and cite evidence about the management and prevention of communicable and non-communicable diseases (e.g., local health department statistics, youth risk behavior survey [YRBS], Centers for Disease Control and Prevention [CDC], National Institutes of Health [NIH]). |